

Bob Cooper's

JUNE 15 2006

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

**Chris Clarke
on compression
tools**

**23 Hours:
31 seconds per
booth/display!**

**What is the
frequency
Kenneth?**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ MHEG-5?
- ✓ Observer Reports

Vol. 12 ♦ No. 142

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 - 2x CI CAM Slots
 - DiSEqC 1.2
 - **Fibre Optic Output Capability**
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 - A must for the professional
 - Simple menus and functions
- Price: Phone up for Quote

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 - 4900 Channel Memory
 - DiSEqC 1.2
 - User Friendly
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Everything? Yeah we got

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- Zinwell KU Band
- MTI C Band, Superhigh gain
- One Cable Solution - CBand
- Dual Output KU 11300 MHz

Positioners

- Superjack EZ-2000
- Superjack DP-6600, DiSEqC 1.0/1.2
- Technosat DP-200, DiSEqC 1.2
- Manual Actuator Driver - EW101
- SAP 2000: 99 Memory positioner

Actuators

- Superjack HARL-3618, 18" Actuator
- Superjack HARL-3624, 24" Actuator
- Superjack DG-120, H/H Mount

Receivers

- SuperNET CA, Irdeto Embedded
- Success, Free-to-Air
- Dion DT-370, Free-to-Air Receiver
- Dion 2x CI, Hardware AllCAMed
- ChangHong, Mediaguard embedded
- SuperNET Terrestrial, DVB-T
- Phoenix High Definition STB

Dish and mounts

- 1.2, 1.8m Solid Prime focus
- 45, 60, 65, 85cm KU dish Offset
- 2.13m, 2.27m, 2.4m, 3.0m, 3.07m, 3.7m, Mesh Dish, Light and Heavy Duty PSI and JOYSAT Available

- CBand Wall brackets
- CBand Concrete mounts and stands
- KU Gutter mounts
- KU Wall mounts
- KU Float mounts
- KU Tinroof mount

Dion 818 CI - Digital Satellite Receiver



- Slim Size and User Friendly OSD
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- Hardware AllCAMed

SuperJack H-H Actuator, DiSEqC embedded



- All it takes is one coaxial cable....
- **NO MOTOR CABLE REQUIRED**
- **DiSEqC Positioner EMBEDDED!**

Supernet - Terrestrial DVB-T



- Digital Terrestrial Receiver
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Dion316 - Digital Satellite Receiver



- FTA + Software Patched
 - 4000 Channel Memory
 - DiSEqC 1.0/1.2 Compatible
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Switches and Splitters

- 2 and 4 way DiSEqC switches
- 0/22kHz switches
- 2 and 4 way cable splitters
- V/H Multiswitch
- 0/12V Switch

Cable - 15m, 25m, 305m packs

- RG6-U Dual Shield Coaxial Cable
- RG6-U Quad Shield Coaxial Cable
- Cat5 Actuator Cable

Plugs

- F Connectors, Screw or Clamp types
- Cable joiners
- AV Splitters
- Cable Strippers
- Cable clampers
- Various other joiners and accessories
- e.g. RCA/SCART cables and converters

Misc

- 2.4GHz AV Sender
- Irdeto 2.06B CAMs, Viaccess CAMs
- Satlook Digital Signal Meter
- Satlook Analogue Signal Meter
- Satlook Digital + Analogue combo
- Satellite finders
- Angle level measure instrument
- High Quality Compasses



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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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our Twelfth year!

COOP'S COMMENT

Globecast. So what are they *really* doing???

One of the side benefits of attending an off-shore trade show is that you bump into people, such as Globecast, who are familiar to you and you instantly feel more at home. Not quite. The USA version of Globecast is a 100+ channel ethnic television pay-TV provider! Shades of TARBS/UBI.

Their large, impressive, centre-aisle stand, staffed by handsome personnel of both persuasions was doing a land-office business just across from our more modest DMS International display where I poached room to introduce folks to my new book, "Television's Pirates," and I had three days to observe closely Globecast female personnel engaged to (wo)man their booth during those interludes when nobody walking by showed any interest to DMS's FTA hardware or my book.

There is, of course, nothing illegal, immoral and possibly not fattening about making a dollar or two out of ethnic programming; heaven knows Mike Boulos has been trying for several years. But it is a tough road in America because, as supreme knowledge master Mike Kohl demonstrates daily (www.global-cm.net), the sky is overflowing with thousands of channels from a variety of sources and if someone really wants to get with the action, most interests can be fulfilled with FTA ethnic sources. Alas, the people at the two battling pay-TV satellite firms (Charlie Ergen's DISH and Rupert Murdoch's DirecTV) dominate the hardware, the installation world and by their weekly mailers and heavy media advertising pretty much lead astray the entire American world of 280 million people. *"If it comes from a satellite" and "it involves a small dish (or two) on your home, it must be one of these two firms you deal with."* DISH offers a quantity of ethnic services bundled in packages, DirecTV barely has their toe in that water but the tide is rising on DISH none the less.

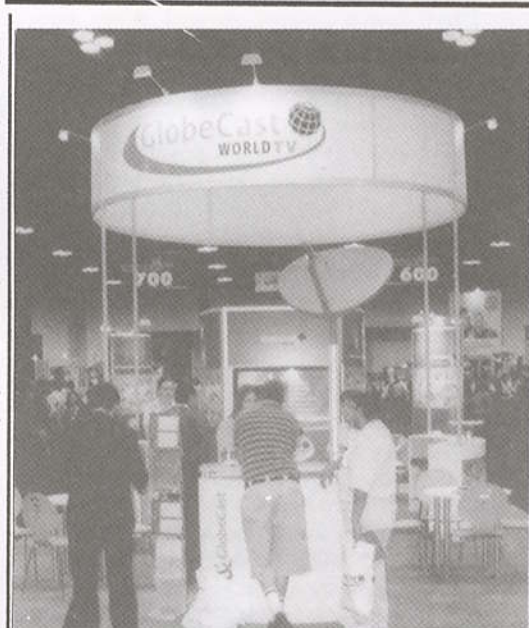
So here is Globecast with a stable of 100+ ethnic channels, not unlike UBI, trying to encourage DISH and DirecTV installers to step outside the circle and offer to customers something other than either of the two competing packages. Further down the ladder, there are those very brave and very bright souls such as Mike Kohl pointing out the lunacy of paying for television - any television - when between C and Ku there are nearly 1,000 channels of service radiating down on rooftops throughout North America - and beyond.

SatFACTS contributor Tim Alderman sarcastically welcomed me into his Oakland (California) home with the terse statement, *"Welcome to the land of signal gluttony!"* It is the American way - buy something because it is "hot" and "hyped" and your neighbour has one already. And then wait around for a month or two and the next great device or service will pop up out of the noise floor and it begins anew. President Teddy Roosevelt, back in 1902, once described his land with the observation, *"The business of America is business."* He meant the USA of course but then when you are an American, you can be pardoned (if not forgiven) for not recognising that Canada, Mexico, Guatemala, Nicaragua (and so on down to the tip of South America) are also a part of the 'Americas.' Even Cuba.

So Globecast is after their share of the "ethnic-American pie," over-there, while here closer to home they play about with FTA transponder leasing and the occasional CA service provider. My prognostication? When Boulos finally meets his banker and it all comes crashing down, Globecast will be there to pick up the pieces. Just like in America.



June 15, 2006



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-On the cover-

Two-way? Stand in front of the dish and end your reproductive capability!

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

JUNE 15, 2006

Fiji into Tahiti

"We have now tried a C-band dish of 7.5 foot diameter on the Fiji Intelsat 701 service and record 98% signal level even on this smallish antenna."

Skip Waldref, Tahiti

DVD Copies

"I have received my 'TVRO History' DVD as well as the 'Bob Cooper TV Reception Addendum' and found both titles very interesting and informative. May I now order the 'CATJ + CSD' DVD as well?"

Roger Paskvan, Bemidji, Minnesota

In our opinion, the CATJ + CSD DVD collection covering 1974 through 1987 is an incredible value at US\$25. There is virtually nothing having to do with cable, satellite, SMATV which is not covered in significant detail there; to order, see www.bobcooper.tv, or page 32 here. History? Yes, but much-much more - a literal encyclopaedia of cable and satellite.

Actuator correction

"In fact the actuator in my hand (SF#141, p. 27) was a Von Weise, not a Thomson-Saginaw. Venture and Thomson-Sagaw are all a part of the same group now, and you never know what you may receive when ordering one! I personally prefer the Von Weise V-76-5, cost effective and proven during 'torture tests' while I was at Orbitron. The V-76-5 was the only actuator that did not get warm (or worse) during testing and stood up to some amazing stresses - owing to a much more efficient gear reduction ratio than others on the market."

Mike Kohl, globalcm@mhtc.net

Echostar 'Blue' Screen Saver?

"Reference SF#139 (p. 20), I have asked around about the problem you described (DISH logo screen saver; 4 hour limit to the advance-time record setting), but there are no answers here (at Echostar). You are apparently attempting to do time-shifting beyond the 4-hour limit; the screen saver 'timer' was built into the software to shut down the hard drive to reduce wear as it normally runs continuously."

Bob Luly, Echostar Colorado

Sadly a four-hour advance time limit is a poor decision for anyone looking for time shifting applications.

BBC is screening, live on (broadband) Internet, the full (BBC) schedule of World Cup matches; the coverage will totally parallel the content on BBC terrestrial (and satellite within the UK). Additionally, BBC coverage of Wimbledon Championships will also be available to Internet broadband connected viewers. BBC is also expanding its USA coverage through cable TV in that country, having added recently distribution on a 24/7 basis through the Cablevision system serving the great New York region. The "Beeb" believes it is the "only European media group capable of taking on Internet and media giants such as Google and AOL."

Power to the people? US cable operator Comcast has increased download Internet speeds to customers to 12 or 16 Mbps, the third incremental increase in as many years. Cable download speeds remain at the cutting edge world-wide as operators improve their processor and system software. Still struggling with dial-up modem service (30 Kbps)? One day - you too will be not just 'broadband' but high speed.

MPEG-2 HD is being tested in London by BBC, hoping to beat competitor BSkyB to the punch. BSkyB has been slowed down in their own HD plans by a shortage of MPEG-4 receivers.

Verry fast WiFi. Airgo Networks, creator of chips for Wi-Fi, is rolling out MIMO (multiple input, multiple output) devices capable of delivering up to 240 Mbps of wideband data over the coverage area. Tests show the system can simultaneously transmit three full bandwidth high definition channels, or several times that number in standard def. The Wi-Fi link, until now, has been the crimp in the chain as network providers have spent and are spending billions to upgrade system speeds. Airgo's new chip designs are already in the process of being produced in quantity by STMicroelectronics and Chinese chip maker Caton Overseas.

SelectTV's problem; money. The new start-up Australian firm using PAS-8 Ku to deliver a mixture of English and ethnic programming channels (36 claimed) for A\$29.95 is running on early-investor money. But investors have been less than enthusiastic with a May stock float designed to raise \$25 million. Perhaps the allure of a third pay-TV competitor has been dulled when Foxtel announced a 'starter package' at \$36.95 which was followed by Optus at \$31.95 (per month). SelectTV's attraction is the pricing and policy of no long term contracts (both Foxtel and Optus want the customer to sign on for 12 months as a minimum in a one-sided contract). Optus at one point offered a "sample package" at \$19.95 which failed because more than 50% of those signing up discontinued the service within 90 days.

PAS-8 (Australian beam) Horizon service discontinued service late in May in a squabble with PanAmSat over transponder payments.

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Star Sports - Nauru?

"I am unable to access the one satellite channel I most wish, Star Sports, here. The local provider for Star says they cannot supply it to me. Do I have other options?"

BT, Nauru

Legally, no. Grey market, yes. Star Sports, like all services in that package, are 'market defined' (restricted) by copyright arrangements between the programming sources they use and the target reception areas. Technically, the signal is 'there' and with appropriate equipment strong enough. But to access Star channels not 'licensed' for your geographic region you must change your address - at least on paper. Locate someone in an area where Star Sports is permitted, 'arrange' a subscription through them, install the appropriate equipment and when they have the service running, have them mail to you the smart card which includes the 'keys' necessary to access the channel your local area is not permitted. Another choice in your case would be C-band Sky Pacific in Fiji which has its own 'Star-related' sports channel, although you may need to locate an 'address' in Fiji to qualify for their smart card and receiver package. This is a 'legal challenge,' not a technical hurdle.

Familiar profile?

"I just had a closer look at the front cartoon image on May's SatFACTS. The man seems to be somewhat familiar!"

Ross Weir, Christchurch

The drawing came from CATJ's front cover late in 1978, a few months before 'small dishes' (such as 3m) became practical as receivers and LNAs improved. CATJ staff artist Richard Montgomery possibly got some inspiration for the profiles by walking around the office and observing people!

First production TVRO receiver?

"I held the belief the first production -line built home receivers were of my Microcomm design and produced at International Crystal in mid 1979. Television's Pirates suggest otherwise - is there clarity on this?"

Dr H. Paul Shuch, Pennsylvania, USA

In fact the first were designed by Steve Richey and Rod Wheeler with serious input advice from English designer Steve Birkill. Ten 'Northern Satellite' receivers, using a 500-1,000 MHz block IF with the down converter out of doors, were built initially at Richey's Oklahoma facility; more followed when Wheeler took the design (which he paid for and owned) back to Canada. Wheeler would become Norsat, a prestigious satellite hardware designer still in business today.

HARDWARE EQUIPMENT PARTS

UPDATE

JUNE 15, 2006

Browse and go. SatWorld has opened a new (second) facility (Clifton Hill, Victoria) designed to expedite the installer's selection of equipment; a warehouse stocked with the parts he most needs, "grab and go" without the normal intrusion of a sales person. SatWorld's new facility, 3km from heart of Melbourne, is supported by an exclusive

(Victoria) distributorship for the Strong line of terrestrial and satellite digital products. Public browsing is also supported with a "test drive" section created to allow product performance sampling in the display area. There is a "strong" message here - work it out yourself.

"TVNZ has not yet approved a supplier of receivers." (?) A TVNZ source is insisting their receiver choice for FTA format service scheduled to launch before (or by) end of year is not yet made. In fact, it is not the receiver but the format that remains liquid. There are MPEG-2 choices (yesterday's technology), MPEG-4 (the most recently introduced technology which compresses channels into smaller spaces) and then - MHEG-5. At least one TVNZ honcho wants MHEG-5 and would be most pleased if that were the decision - but as SatFACTS has reported there are dangers associated with being the "first into the water" with any new technology. And - this is important - MHEG-5 capable receivers are, for now, mostly a laboratory curiosity. To launch a new "lifetime" service built around receivers that do not exist could be an interesting exercise in futility. *In theory*, MHEG-5 may be the correct choice but ...



John Francis Guerrero - RIP

He was never famous, seldom attracted overt attention (in fact he did not make the pages of 'Television's Pirates' - our regret). But over the history of satellites, and prior, John Guerrero was a technical legend known world-wide for his skills and determination. When Russia launched Sputnik, John was stationed at 'the' South Pole creating communication circuits to North America. John's amateur radio skills were pressed into service (licensed as KL7BNJ) and because of his polar location he, uniquely, was able to monitor the strange beeping of Sputnik 24 hours a day at a time when the US government was hungry for information on this mysterious device. John designed on paper, oversaw the modular construction and then went into the field for world-wide commissioning of Intelsat A terminals, designed the first Gyroscope actuated transportable uplink which went into service on board a US aircraft carrier to provide live coverage of Apollo splash downs. Your editor knew John in our own youth while serving a stint for Western Radio Amateur. Thanks to Mike Kohl for the updates.

Y30J0W

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Irdeto 2.06B CAM	\$110	PBI C+Ku band LNB	\$65
Viaccess CAM	\$110	Zinwell C band LNB	\$35
65cm Azure shine offset dish	\$28	Zinwell Ku band LNB	\$25
75cm Azure shine offset dish	\$40	MTI C band LNB	\$25
85cm Azure shine offset dish	\$45	MTI one cable solution LNB	\$45
One leg gutter mount	\$18	Satellite finder	\$25
Two leg gutter mount	\$22	RG6 striper	\$20
Tin roof mount	\$22	RG6/RG11 crimper	\$30
Wall mount	\$15	Angle meter	\$35
Superjack H-H motor	\$95	Compass High Quality	\$10
2.3m SD mesh dish	\$150	RG 6 Crimp Connector 100 pack	\$25
3m SD mesh dish	\$340	22K switch	\$10
3m HD mesh dish	\$380	Two way DiSEqC switch	\$10
3" 2.5m galvanised pole	\$30	Four way DiSEqC switch	\$12
3" 3m galvanised pole	\$35	Satellite 2 way splitter	\$1.50
3" 3.5m galvanised pole	\$40	Satellite 3 way splitter	\$2
3" Triangle Pole for C band dish	\$50	Satellite 4 way splitter	\$2.50
Speaker Stand for caravan use Ku dish	\$45	4 way multi-switch	\$35

Best performance



Paralipses 1.2m prime focus panel dish
\$160/each
AZ/EL mount \$32/each



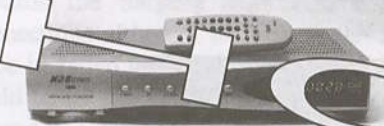
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- Lots of memory positions for spectrum pictures
- RS232 for PC-connection
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- TV-PART:
- 2-900 MHz spectrum analyzer
- Presents full range spectrum (and expanded)
- Very high accuracy, ±1dB (at 20°C)
- SAT part:
- 920-2150MHz spectrum analyzer. Digital BER, QPSK and SW-ratio
- Satellite-ID and TV/Radio-channel info (MT)
- Tunable audio bandwidth 5.5-8.5MHz
- LNB voltage 13/18V, 22kHz tone switch



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Dreamax DT470 \$160/
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Satellite Receiver



Zinwell 15K LNB \$28/each
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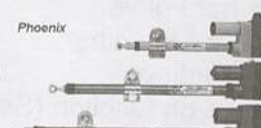
Moteck SG2100 Motor \$105/each



SuperJack EZ2000 Positioner \$50/each



Moteck V Box II DiSEqC1.2 Positioner \$65/each



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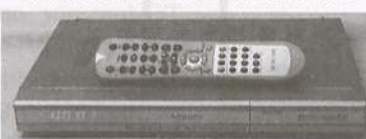
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- One Box RG-6 Cable

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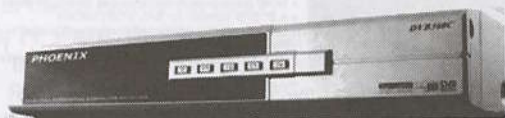


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Chris Clarke Explores the world of compression tools

One of my objectives while attending Satellite Expo 2006 in Atlanta (April) was to search out the latest technology in that mundane area of daily physical exercise; affixing F connectors on your cable of choice. There were many candidates, most of which I had not previously encountered, and after a day of booth-by-booth crawling I focused on two items; the Cablematic AS by Ripley Tools (it does RG59, RG6, RG11 in a compression format), and, the Sargent Quality Tools 9000 from the Rostra Tool Company. To the best of my knowledge, neither tool is available presently in "the Pacific."

Hauling them home through many close calls with USA TSA (those guys and gals who put you through relentless inspections and grilling the minute you enter any American airport these days), I decided the best test might involve one or more total novice users. I selected 'Builder Bob' to whom I gave a single demonstration and explanation of proper use (something I had 12 hours to work out while riding from San Francisco to Auckland). My rationale stems from an ex-military background; show them once, see how many pick up the correct information on one shot. Those will be the best candidates for more complex chores; the rest will be assigned to kitchen duty!

'Bob the builder' was then handed both tools and some pieces of cable to which I had previously attached, correctly, compression fittings; RG6 and RG11. I can appropriately report that Builder Bob, perhaps assisted by his larger-than-normal hands, attached both fittings without any difficulties.

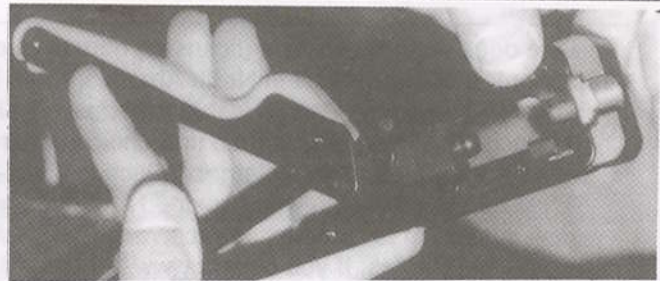
My second candidate was an electrician (no, you canNOT see this one coming - *quit guessing!*). He, too, produced perfect connector-to-cable attachments but as his hands are smaller than Bob's, he had to use both on the Ripley. Some investigation. The Ripley tool is a quality, cast product and it weighs more than the Sargent. But the shorter handle requires greater leverage to complete the compression. The importance here lies where there are many (many!) connectors to be fitted in a work-day, such as a hotel, motel or SMATV installation. So in this respect the ease of use biases towards the Sargent tool. Yes, both tools make quality connections although in fairness the Sargent also allows the to-be-installed fitting to rest slightly easier in the cradle. This could be another plus in their favour, should you be fumbling around in a dark attic trying to get the fitting attached.

And although the weight would not normally be an issue with the Ripley tool, the extra weight could be felt on the 'tool belt test' after a short period of time, particularly if a quantity of tools need to be carried constantly. The Sargent, which weighs in at 230 grams/8 oz, did not have the same effect on my tool belt. There is also an (optional) 'Holster' which includes a loop for sliding onto the existing tool belt.

Pricing? Well, a new part and a foreign currency make precise numbers difficult - especially with the Kiwi and Australian dollars sliding around (mostly down!) against the



Author Clarke in Atlanta with his "two scores" - Ripley's Cablematic tri-size (right) and Sargent's 9000 - both are compression, of course (*are you listening, Match Master???*)

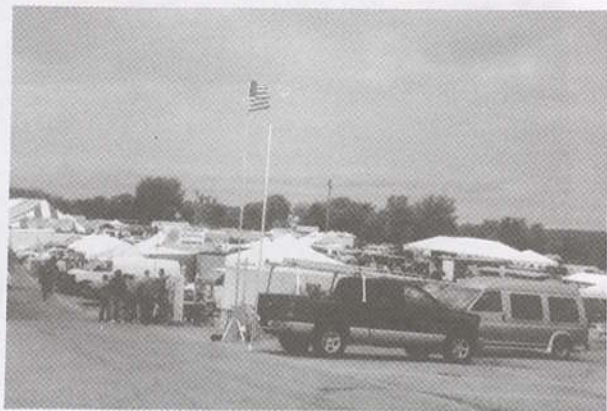


master currency; the US dollar. The USA price for either tool is just shy of US\$100 (+ their tax). I have been using a Ripley brand tool for around a year now with no mechanical problems or constant-use issues. However, at the end of a long day, hauling it around on my tool belt begins to take a toll (the well known 'belt droop' forcing the tool kit down around your knees!).

Both tools are robust and will give excellent performance, the points highlighted here are perhaps my personal bias and each user will find their own reasons to graduate from 'hex crimp amateur fittings' to the professional world of compression fittings. Both will be available through selected distributors throughout Asia and the Pacific about which your interest should be to advancedaerials@extra.co.nz.

Not to be missed

Opportunity of a lifetime: Dayton's 'annual Hamfest'



A tiny corner of the outdoor 'Flea Market' lot. Stalls are in \$50 region, a total of 2,477 separate stall reserved 'spots' in two gigantic lots. The majority are ute/trunk displayed materials, equipment but some are elaborate outdoor tents occupying up to 10 stall spots on the ground. Indoor displays are broken into four individually separate hall areas; 210 separate exhibitors occupying 422 equal segments of floor space. Dayton is "open" 23 hours leaving attendees 31 seconds (!), less walking/loo/eating time, to visit **each** of the displays/exhibits!

Each year, in Germany, DARC (a German Ham radio group) creates a giant exhibition typically attracting 20,000 electronic enthusiasts and up to 280 exhibitors. On a scale of how much equipment and how many people can you compress into a facility, this is big. But it is not the largest.

America's Dayton Hamvention (Dayton, Ohio - the original home of the Wright Brothers) is bigger. Significantly bigger. And it is about far more than "ham" (or amateur) radio. It is the one event each year where virtually every aspect of electronic yesterday, today and tomorrow ends up available

for sale. We attended, largely to help "launch" the book *Television's Pirates* but secretly because after 52 years of being a licensed amateur, it was something long overdue.

If you are not a ham, the initial impression with 27,000+ fellow attendees can be overwhelming. The facility combines indoor booths (400+ booth spaces) and something uniquely American, huge-huge-huge "flea" (boot) sale parking lots with more than 2,400 assigned "stalls" each crammed to overflow with more electronics than the average (or above average) individual can possibly assimilate in the limited (23

One does not have to be a (licensed) ham to attend Dayton - virtually everything in the electronics world is represented there. At least in North America, there is nothing even approaching the size of Dayton. The primary negative for us in the Pacific is that America is a NTSC country which makes the (abundant including satellite) products displayed of less than first-choice option to us. But for component parts (resistors, capacitors, ICs, transistors et al) there is no larger collection world-wide. Right - H. Paul Shuch (amateur N6TX, founder of the SETI League), the man who designed and oversaw into production one of the world's very first C-band home dish system mass production receivers - the ICM (International Crystal) 4200 with his autographed copy of *Television's Pirates*. If you caught www.bobcooper.tv 'Classic Video' through June 15th, you saw Shuch during the world's first small-terminal Intelsat reception experiments.



Grand Opening

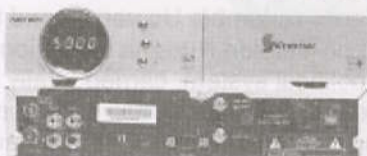
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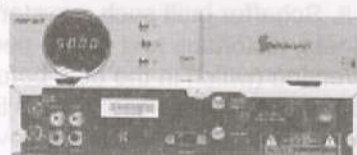
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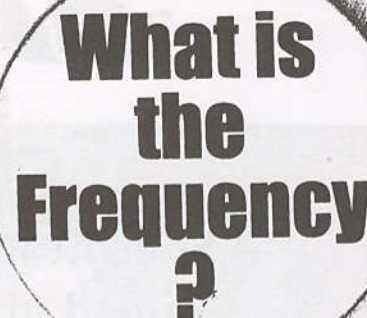
What's the frequency - KENNETH?

This is one of those hard-to-believe (but true) stories which illustrates how the media can be a victim of its own hype. In the 1980s, TV2Me inventor Kenny Schaffer created a specialised C-band dish tracking system to follow the figure-8 north polar orbit of the Russian Molniya satellites. Over-equator Clarke orbit belt satellites reach due north (or south) to around 75 degrees latitude - the curvature of the earth prevents reception past that point (ie. if so located, you cannot 'see' the equatorial orbit belt even at its 35,600km altitude). Russia (the country) has significant population (and land mass area) at latitudes between 75 and 90 degrees (north) and the 'Molniya Orbit' was created allowing satellites to fly in a giant (always moving) figure-8 pattern that reaches directly over the north pole, and then turns around and heads south. With this system, it was possible to transmit television (radio, et al) to the more northern latitudes. It also happens that when the satellite is at the top (north end) of the loop, it can 'see' essentially everything north of the equator. Molniya could therefore be received in London, New York, even Hawaii if you knew how to find its always moving target, lock on

and follow it. Schaffer built such a system, installed the first at New York's Columbia University and for the first time students, historians and media people could witness not the export-version Russian television - but the internal version (which in the 80s, before the failure of the Russian political system, carried totally different content and messages). It was like peeking through a keyhole into Russia's hidden bathroom.

Schaffer collected extensive media coverage for his Molniya tracking system, and this in turn attracted CBS News' Sixty Minutes reporter Dan Rather who was fascinated with the content of Russia's forbidden television. So Dan would hang out at Columbia's Harriman Institute whenever he could, often well past midnight. One such post-midnight viewing session ended and he walked out of the facility to be accosted by two men brandishing pieces of pipe as weapons. "What is the frequency - KENNETH?" they demanded, beating the newsman about the head and shoulders. Dan neither knew "the frequency" nor was he "Kenneth." He collapsed onto the street semi-conscious as the pair departed.

Years later the story (told here) surfaced and the shirt-jacket 55mm button-pin appeared at Ham gatherings (it is yellow with black lettering), less the key word: "Kenneth." The attackers apparently believed newsman Dan Rather was in fact inventor Kenny Schaffer (the two bare no physical resemblance). Coop wore his collector's edition of this pin during the 2006 Dayton Hamfest 'testing' people's memories. Hundreds, thousands must have seen and read it and only one chap on the last day of the Hamfest actually knew the full story. And now you do as well.



What is
the
Frequency?
?

hours) available. The leading feature would be the discount pricing (often 20% of retail and if you catch an exhibitor just as the show is closing - even better). The second major attraction, after pricing, is the variety of items on sale - heavy on computers, video, yes-satellite (complete Ku-band systems including dish, LNBf and FTA receiver for US\$25!). Ham radio equipment is pervasive but often lost in the overwash of "everything electronic" available.

We were "found" by a sizeable number of Australians, a smaller number of Kiwis, and the odd fellow (or gal) from the Pacific islands. Show managers claim, possibly without exaggeration, "people from more than 100 countries attend."

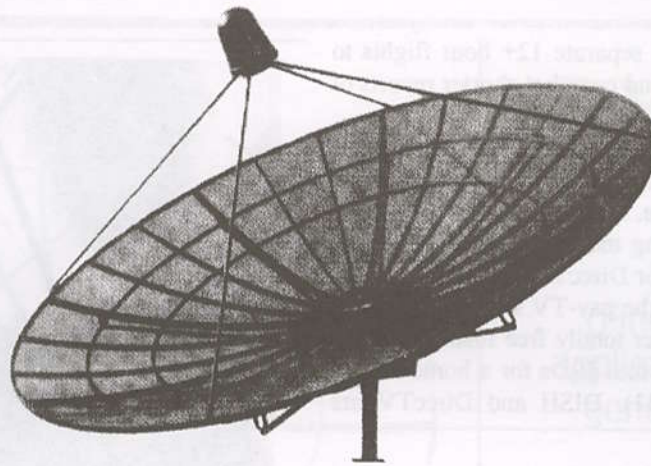
As we point out on www.bobcooper.tv, most of the early original-pioneering work done in America's unique development of the C-band home system flowed out of the hands and workshops of (licensed) ham operators. They - the hams - were a natural for this brand new field late in the 1970s because some had the special skills to deal with microwave technology and to a man they had the typical ham mindset - "Nobody told me it could not be done, so I went ahead and did it." Whatever "it" happened to be.

One of these mindset guys we found in Dayton was H. Paul Shuch, amateur N6TX, who in 1978-1979 was building GOES (1691 MHz weather satellite) reception modules. Paul was a professor of electronics technology at a California

University, and to him the "difference" between 4,200 MHz and 1691 MHz was merely a design challenge. We first visited (and interviewed) Paul in early 1979, and he subsequently agreed to participate as a "microwave instructor" for a ten hour cram course in designing C-band reception equipment at SPTS (#1) in Oklahoma City (July 1979). Paul's full ten hour course, videotaped, is a rare but memorable connection with pre-C-band TVRO technology and all that followed. When we work out a way to "share" it with those so-interested, on DVD, we will advise you here (the original NTSC 3/4" tapes are in abominable shape and therein rests the challenge to get it on DVD).

Paul would go on to become a Professor in Pennsylvania, create the concept of SETI (Search for Extraterrestrial Intelligence) for which he served as chief cook and bottle washer for a decade. Now semi-retired, he does volunteer work for the (American) ARRL amateur radio group assisting them in better reaching non-hams with the message that, "Ham radio is the foundation for a lifetime of individual technical growth." And it is never too late to start - we talked with a chap of 92 at Dayton who had only been 'licensed' at age 90, and as he told us, "I am having the time of my life and only wish I had explored a latent interest in ham radio ten, twenty, fifty years ago!" Amateur licenses world-wide are now 'code free' (no Morse requirement); get with it!

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Errata, errata, errata

Odds and Ends hanging around the SatFACTS editing desk - begging to be shared!

A busy month involving two separate 12+ hour flights to California inevitably leaves behind one-shot shorter reports of some interest to the Pacific-Asia satellite community.

Installers for Australian and NZ pay-TV Ku services are prone to complain about their limited pay and heavy bureaucratic (paperwork) routine. It is no better in the USA - especially if you are into nothing more complex than acting solely as an installer for DISH or DirecTV. As we displayed in SF#141, the primary aim of the pay-TV services is to "get into the home" by offering either totally free installs or very priced reduced installs (such as four IRDs for a home for US \$19.95, installed; p. 15 SF#141). DISH and DirecTV are



The way it works in USA. You are allowed to be an independent installer, representing DirecTV or DISH (two competitive Ku-band services), selling both the equipment and the installation. This is more like being a commission-paid "sales rep" than a true installer because customers find you, agree to the package you represent, and then you make the install getting paid either totally by the service, or, split between the service and the consumer (extra wiring, etc.).

available virtually every place - with displays in Radio Shack (think DSE), consumer electronic stores, even grocery and pharmacy outlets. Between the two, they have attracted in excess of 24 million US homes, approximately 23% of the total market (cable leads with 67% leaving a scant 10% connected to neither).

Resisting this overwash is subject to peril - services such as HBO and ESPN are as common in homes as the major FTA terrestrial broadcast networks which, most agree, are in their last days of profitable operation. Australia, by comparison, hovers just above 20% pay penetration while NZ recently passed 40%.



Tim Alderman - California. During our trip in April to attend Satellite Expo 2006, we stopped in **Oakland** (California - not to be confused with **Auckland**, NZ) to have a 'native lunch' with Tim, perhaps the greatest rat-hole collector of ancient C (and Ku-band) hardware in America. He has located and supplied a wide variety of no longer available parts, including some recently to Garry Cratt at Avcomm; Tim@electron.org.

In Oakland, Tim still runs 'antiquated' analogue gear including diagnostic analysis of CA channels (below).

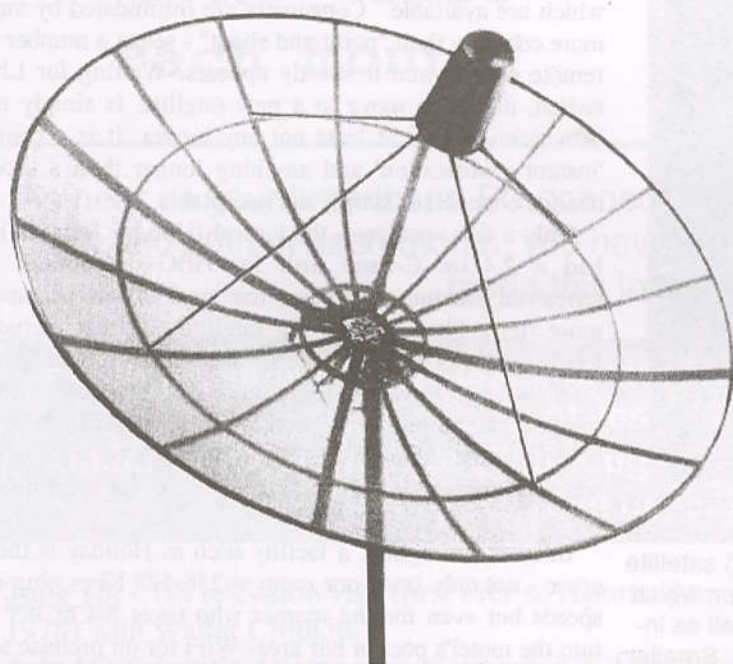




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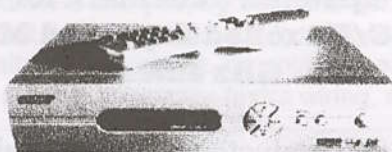
A modern motel "headend/dish system" in America. It is all via satellite. The larger dish is a two-way (note extra equipment at feed - includes uplink transmitter) satellite connection for the 300 rooms at this Holiday Inn which also happens to include WiFi for visitors as well as in-room jacks for laptops; broadband via satellite. Smaller dish is for (in this case) DISH programming package (just under 70 channels in your room). In the Pacific, we have a long ways to go to catch up to this technology.

Tim Alderman is one such 'resistor' as he has written here in SatFACTS over the years. But even he finds it necessary to combine FTA C (and Ku) with pay services if he is to continue to have access to the programming that interests him. That, perhaps, is the key. Americans could easily arrange their "suite of channels" by still using C-band (and/or Ku-band FTA) but DISH and DirecTV have created programming guides and channel packages which make it sooo much simpler to navigate the "gluttony of services" which are available. Consumers are intimidated by anything more complex than "point and shoot" - select a number on the remote control and it shortly appears. Waiting for LNBs to switch, dishes to move to a new satellite, is simply not the 'American Way' - at least not any longer. It is a country of 'instant gratification' and anything longer than a second to change channels is simply not acceptable.

Only a few years ago, the typical (Holiday Inn, etc.) motel had a 2.4-3m C-band dish for HBO+ reception, and a terrestrial antenna to process the local off-air channels. No more (left). Now it is all via satellite and that includes the local signals as well (both DISH and DirecTV offer 'local into local' - your in-town/county/state TV channels through a satellite fed connection). Thousands of Scientific Atlanta and other brand C-band dishes are now replaced with what you see here - Internet via satellite plus TV via satellite, all on Ku.

Internet throughout a facility such as Holiday is the latest craze - not only into your room at 256-528 Kbps plug-in jack speeds but even for the roamer who takes his or her laptop into the motel's pool or bar area- WiFi for on premise service. Entire city-wide, city-paid-for WiFi systems are now coming on line - attracting new residents and businesses with their "leading edge technology." This is no longer your father's (or heaven-forbid, your grandfather's) world.

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FOUR monthly-change text and video reports - think of it as SatFACTS of yesteryear- under the "Perspective 1" (through "3") and "Classic Video" buttons; dial up, enjoy!

June 15: CBS television visit (first ever so reported) to a private home satellite terminal (October 1978) with Walter Cronkite.

July 15: Scientific Atlanta announcement, detail on their new "HomeSat" TVRO terminal sales programme; April 1979.

August 15: US FCC approval of unlicensed home-dish systems (TVRO); October 1979 leaving unanswered "The Section 605 (Copyright) question."

September 15: Major coverage (7 minutes 33 seconds) from NBC's Tom Snyder and Jack Perkins of the explosion in home (C-band) TVROs in America (December 1979).

October 15: The first home experimenter to build a total C-band system using surplus parts and his kitchen table as a laboratory; Robert Coleman (1979).

November 15: The antennas of an early TVRO trade Show (Houston, Texas - November 1980) set to a music video.

December 15: The man who created the first, quickly copied, "sectional" C-band antennas, using segments of a parabola (Bob Taggart of Chaparral Communications) (1980).
(2007)

January 15: Stanford University professor H. Taylor Howard, a founder of trade association S.P.A.C.E. and his approach to receiver designs (1979-1980).

February 15: Motorola maverick inventor David Barker and his first-ever image-cancelling single conversion 70 MHz receiver design (1979-1980).

March 15: Either the brightest guy to ever ascend the C-band throne, or the most greedy - you decide. Richard L. Brown, Attorney for S.P.A.C.E. (1980)

April 15: Music Video featuring English pioneer Steve Birkill, Canadian super-pirate Rod Wheeler, first TVRO receiver designer Steve Richey, Ted Turner, and many more (1979-1980).

May 15: Canadian super-pirate David Brough and his approach to extending television to tens of thousands of Canadians disenfranchised by their government (1979).

June 15: Low-cost receiver designer John Ramsey (Ramsey Electronics) who pioneered every significant price cut in C-band receivers from 1980 through 1984.

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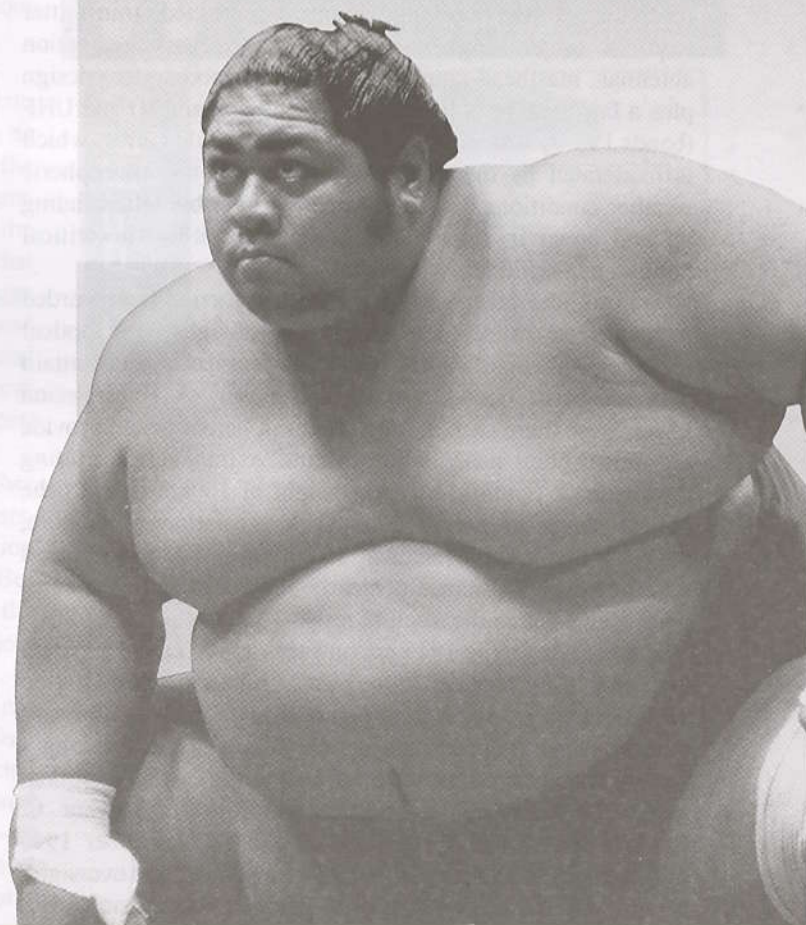
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Prior to satellites, only very limited program exchanges could take place between geographically defined points (Los Angeles > Sydney), always with a time delay (measured in days, weeks) and often with a sacrifice in broadcast quality. Early satellites, including Sputnik, carried the message on board, into space - from which they were broadcast. The satellite was taking advantage of a natural law of physics - all radio (television) waves radiate from the transmitter (source) in straight lines - to have quality (or any) reception requires that, in the physical sense, the transmitter can 'see' the receiver. Progressively past the point of 'optical connection' there will be less and less signal available until a distant point is reached where the signal remaining is too weak to allow a receiver to operate. At some point between the 'optical limit' and the last 'fringe area reception' zone the majority of the signal wanders off into space. Between those two points, any reception of the no-longer optical-connected transmitter requires larger, higher gain, more expensive reception antennas, masthead amplifiers, and both good system design plus a fair amount of luck. VHF (bands I, II and III) and UHF (bands IV, V) waves are especially prone to this effect which is moderated by the minute/hour/day with the atmospheric weather conditions that exist (creating unstable, often fading up and down in signal level reception) within the critical optic to non-optic reception point.

Sputnik and other early US satellites carried pre-recorded messages to an altitude where 'line-of-sight' (the optical horizon) was significantly further than anyone could attain with an earth bound transmission tower. A transmission tower, were there such a thing, 16km in height would provide an optical point near 300km distant. A transmitter orbiting the earth, as Sputnik did, at a height of 160km extends the optical range to nearly 800km. A geostationary satellite, hovering above the equator at 35,600km provides an optical coverage over a distance of nearly 16,000km from the earth point above which the satellite rests.

The goal, from the 1945 era onward, was to create a system to make this happen - to place a 'radio relay' station 35,600km above the equator and then to lock its forward motion speed (nothing can stand still in space for long - gravity and solar effects will move it) to the earth's rotational speed (24 hours for a complete revolution). Arthur C. Clarke's space-breaking analysis of this in November 1946 suggested all of the currently used factors with one oversight; Clarke saw the 'radio relays' as manned contrivances with

programming content sent to, manipulated by, the on board crew before being retransmitted to earth. In fact, the first and later geostationary satellites would be unmanned and function as automatic, unattended relay stations.

Geostationary satellites, then, changed all of the rules. No longer were television (radio, telephone, data link) circuits limited by a relatively short 'optical link horizon' measured in tens or a few hundred kilometres. In theory, the polar regions above and below 75N and 75S aside, three properly placed geostationary satellites could provide full-earth coverage with a modest amount of overlap between the three.

Further, if the 'thru-put' (bandwidth or traffic capacity) of any of the three was consumed, the system could be expanded by simply sending another parallel operating satellite to approximately the same geostationary location; a nearly endless growth opportunity.

A run on telco's bank

By the 1980s, the demonstrated capabilities of satellite were so promising that analysts were openly predicting the end of earth-bound communication circuits. Most directly affected by this fear, local-regional-national and international wire dependent telephone firms. It could be shown, on paper, that it cost less - far less - to launch a new satellite over the Pacific to connect say the USA and Australia then to consider spooling out 14,000 miles of new under sea cable. Furthermore, the bandwidth of traffic capacity of the satellite was superior (in the mid 80s) to the best then-available undersea cables. And this created a "run on the net worth" (stock) for the telephone giants. Yet here, twenty years post this era, the telephone firms continue robust, healthy, and by-in-large still dominant. What happened to deflect this satellite threat?

Fibre optic is the answer. Fibre optic is to standard cabling what satellite originally was to optical-horizon limited transmission systems. It goes further, with a far greater capacity, than copper/lead/silver/platinum based cables; whether above ground, in the ground or under the sea. Further, fibre optic cables can be designed with virtually any number of separate, individual, transmission paths. If the bandwidth capacity requirement of one fibre bundle will be exceeded by the traffic between Los Angeles and Sydney, simply bundle additional cables into a common outer sheath. The real investment dollars in fibre systems is not the fibre itself but the labour and support equipment required to put the fibre in place. For 3-4% additional total cost, the bandwidth capacity on a link from Los Angeles to Sydney can be doubled; doubled again for another 10-12%. Suddenly the terrestrial-bound telephone companies had a cost effective answer to the threat of satellites. And that, by the mid 90s, created a reverse run on the bank; this one on satellite company stock values.

Satellite and major fibre optic projects run from the mid-hundreds-of-million-dollar to the multi-billion dollar range. Finance comes from the largest of banking groups, and

there is (and has always been) a 'herd mentality' within such groups. Even the first (1860s) trans-Atlantic lead sheathed single circuit (one message at a time) undersea cable links were vulnerable to the quirks and moods of the banking community.

In the ten year span from the mid-90s to today, there has been a slow realisation in banking circles that while satellites may have at one time been a threat to ground/undersea based networking, in fact there is a marketplace need for *both*, simultaneously. Most now accept that satellites do one thing very well (provide in or out links from a geographic point without advance warning or time to create a connection to fibre optics) while the ever growing reach of fibre does something else very well; large (to very large) 'broadband' connections between any two (or more) points - provided only that each of the points is within plug-in range of a fibre optic network.

A stable platform

A combination of these two once-competitive systems is now reaching a mature stage of technological perfection beyond which major advances will be in an unrelated field: software. Either can connect you to anyone anywhere but the capacity of each continues to be paced less by their individual infrastructures than the support systems that 'plug in' to either one.

This is the 'compression' challenge. Both satellite and fibre are pretty much 'transparent' to the user and the material being transmitted but each has an individual 'maximum capacity' available. You cannot force 5 litres of liquid into a 4 litre container and both satellite and fibre have capacity carriage limits set by the design of their systems. When a satellite runs out of capacity, the obvious solution is to create a second one and stick it next to the first; 5 litres into two side-by-side 4 litre containers. When a fibre network runs out of 'bandwidth', place a new one parallel to it.

There is a better solution; that 'compression' term again.

Until the mid 80s, the only way mankind could manipulate voice, vision, data was to use an electronic format known as analogue, dating back to the first faltering steps with the telephone in the late 19th century. But something knew, called digital, was developing, primarily as a result of the creation of computer systems. Digital was to analogue what the first petrol operated vehicles was to the horse and buggy limitations of transport, an entirely new level of freedom and from that development a multitude of new commercial opportunities (and decades of coping with the change - from roadways to motels to shopping centres, all dependent upon the petrol machines).

Early digital (through the mid-90s) produced higher transmission quality, not to be confused with lower costs. Initially, the 'bandwidth' of a digital-format television program approached the 'bandwidth' of analogue. But analogue had a compression barrier - how small the bandwidth could become before the quality deteriorated below an acceptable level - and digital held the promise it did not.

Early digital (MPEG-1 format) was better but not appreciably more efficient than analogue. Fortunately, before there was much adoption of digital, MPEG-2 was perfected (today most of what we see on satellite remains MPEG-2) and now for the first time it was possible to chain together two-up to eight separate TV channels into the bandwidth 'space' required for a single analogue channel. It was at this point

that the real creative juices began to flow in software shops world wide.

The challenge

Bandwidth, such as through a satellite transponder, is finite; there are edges to it, there are maximums. But bandwidth is like seats in a modern 747; in a given amount of floor space (floor space equals bandwidth) you can place 40

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First Class seats, or, 85 economy seats. The difference between 40 and 85 is dollars - always dollars.

A 27 MHz bandwidth transponder (or an equivalent amount of space in a fibre line) works best for the investors when it is 'full'. Remember - investors are folks who go to hard-nosed bankers seeking hundreds of millions of dollars to build a satellite (or fibre network).

A 747 with 40 first class seats sells each seat for an established price. If the same floor space will accommodate 85 economy customers, there is a constant juggling of how to use that space (notice how easily the partitions separating first and economy can be moved and the seats repositioned the next time you are on a major size plane).

Here the analogy ends. A 27 MHz bandwidth transponder can be configured to accommodate a single MCPC (such as the once-Euro bouquet on As2) or it can be divided into smaller ('economy seat') slices for as many as ten-twelve separate users. Now, suppose that one of those 'slice users' found a way to reduce his bandwidth from say 2.5 MHz to 1.5 MHz and lose nothing in the process - except a monthly payment for an additional 1 MHz of transponder space (which he no longer required)? Remember - all users of satellite, fibre networks, pay first and foremost for the bandwidth they consume.

Compression: The art of making large amounts of data fit into smaller bandwidths. Of all transmission formats, video (moving images) is the most difficult to compress. A television image at 25/30 'frames' per second transmits and retransmits the same time-evolving image over and over again. The frames-per-second creates the illusion (it is an illusion, totally dependent upon the ability of your brain

through your eye-vision to assimilate rapidly changing content) of motion. Television is not, never has been, 'motion' in the sense that your eye normally sees motion live and direct (you at the scene of motion). It is, always has been, a series of 'rapidly changing single shot slides' changing from one to another so fast that each one stays in your mind just long enough for the next one in the series to imprint.

Compression is the art of looking at each 1/25th (1/30th) 'slide' and electronically picking up only the changes between content from slide 1 to slide 2 (etc.). So rather than transmitting all of slide 1 all over again, with the usually small change found in slide 2, compression sees where the scene from 1 to 2 has in fact really changed and then as 'slide 2', it transmits *only* that change. At the receiver, slide 1 is retained while slide 2 *changes* only modify the content of 1 and that is what the viewer sees; slide 1 modified by the *changes* in slide 2. This sequence repeats itself for slides 3 and so on.

If you only send *the changes* between 'slides' much less bandwidth is required (by not repeating the static portion of 1 again, the bandwidth required for the static portion is ignored).

Alas, what is change? How much deviation between slide 1 and 2 can be tolerated before the compression system decides it is change in content?

Moreover, what is the processing system doing with the original unchanged content of slide 1? In Kenny Schaffer's TV2Me broadcast quality Internet video transmission system all of slide 1 is reprocessed as slide 2 along with the modest changes between 1 and 2. In the low-cost Slingbox transmission system, the changes in 2 from 1 are merely

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'pasted' on top of slide 1 and the result on any screen of decent size is a blurred image whereas with TV2Me the image is significantly higher quality.

This, then, is the challenge. How much 'motion' can you take out of the video content and not create an image which is something less than full-flow video? Is it possible to take out more than the original can stand, and then, somehow, smooth over the rough edges at the receiver?

MPEG2>MPEG4>MHEG5

There is money - big money - in compression. Firstly, any commercial viable compression technology (software) can be sold to and used by a programmer. And money changes hands. Next, when a programmer reduces the bandwidth he requires on satellite (or fibre) because of 'better' compression, he pays less for his (smaller) bandwidth. Indirectly you might expect that to be contrary to the best interests of the satellite (or fibre network) operator. It is not - this opens up new opportunities to sell new previously-in-use bandwidth to new users (think of 747 Economy versus first class seating). The market expands, everyone is happy.

Well, almost. Because for every change in compression technology there must be a companion change in the equipment used at the receiving end of the circuit - your home or shop - and that is where the problems arise.

A MPEG-2 receiver will not (there are exceptions but few) work with MPEG-4 and MPEG-4 is the now-being-rolled out latest compression algorithm. There is a danger here - a big one for satellite operators. An example. Britain's BSkyB wants to roll out HD (high definition) channels and beat the BBC (and others) in the UK to this next plateau of technology. Anticipating arrival of MPEG-4 level HD

receivers, BSkyB promoted the service heavily and took orders for receivers. Now, unfortunately, they are being forced into the not-good-for-public-relations position of advising those who ordered the HD receivers yonks ago that because of a supplier crunch, their HD receivers will be late; *very late*.

Rushing in with a new compression technology is dangerous, for without support from the receiver suppliers, you could (as BSkyB seems to be) embarrassed by optimistic but unrealistic promises to deliver the receivers.

If MPEG-4 is the latest gee-whiz technology (and requiring its own hardware-software derived receivers), still further down the track is MHEG-5. At any given moment in time (like, right now) there is: (1) The accepted, majority used MPEG software, (2) The next 'pretender' software, approved for mass use but still struggling to transition from embryonic to real world, and finally, (3) The next 'under development' system which in a few years becomes the 'next pretender' as something else comes along to replace it as the 'in development' version. For the immediate future, this sequence is likely to continue - software developers around the world are at this very instant working on MHEG-6 or whatever it may ultimately be called.

The pathway from "Eureka!" (look at this!) to general availability of a new technology is long and not as rapid as one might expect. Any advance requires, as a minimum, a brand new processor chip. Which is where BSkyB got into trouble - the chip makers were not able to deliver MPEG-4 specific chips to the chosen receiver supplier - as they had promised. There are other changes of course - at the transmission end of the circuit, the encoders have to be



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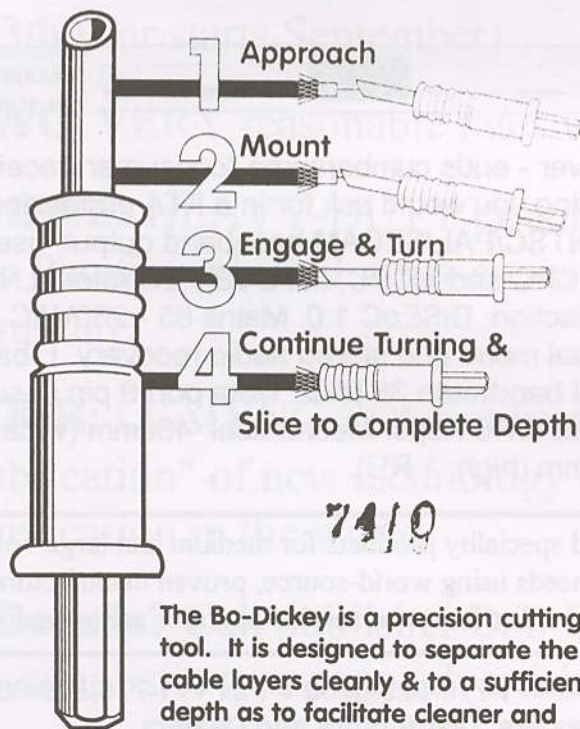
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reconfigured from one format (MPEG-2) to the new one. All of this suggests, correctly, that the transitional period from one established software compression routine to the 'next' generation is not without its hiccups.

MPEG-4 is truly coming - it will infect hard drive recorders, DVD recorders, even DVD players. But in that roll-out process, many people will find something they thought was the latest is not in fact that. MPEG-4 is supposed to be backward compatible with MPEG 2 (and even 1) which means in the case of DVD players, all of those movie discs you have collected will (should!) play even on the new '4' player.

MHEG-5, on the other hand, while ten years in the making (SatFACTS #141, p. 4), remains a contender for the 'next level of compression' which will involve a long trail yet to be travelled for industry acceptance, custom chip creation and ultimately the manufacture of hardware to process it. What should be obvious here is that while new compression and signal processing may be desirable for users, the pathway from "Eureka!" to marketplace is as a frequently ten years - or longer.

And this note regarding MHEG-5: Although there are individuals at TVNZ who believe this is the future of their FTA service, perhaps primarily because MHEG-5 has teletext capabilities missing with MPEG-2 and MPEG-4, the reality is that 'tiny' New Zealand is not in a position to even 'trial' such a technology on a nation-wide basis lacking general industry approval of the technology. Even MPEG-4, right now - *today* - is a dangerous exercise as BSkyB has discovered.

Is there an end?

An obvious question is "where" and "when" will it all end? At what point have we compressed digital to the final Nth degree and any further compression only results in more artefacts which cannot be corrected by receiver processing?

If Kenny Schaffer (TV2Me) is accurate, "another ten years - possibly." Kenny believes there is a 'major breakthrough' still to be worked out - the ability to recreate full motion video on normal 30 Kbps dial-up telephone lines (or their equivalent; in ten years time there are not likely to be many 30 Kbps restricted phone lines still functional except in third world countries).

In the interim there will be bad decisions (BSkyB's to rush into MPEG-4 HD), slow starters and dreamers who mix fact with fiction. Digital, the technology, has turned out to be "the technology that will change the world overnight" into "the technology that will, perhaps by 2020, be as mature as analogue was in 1980 when all of this digital hype began."

As an installer or consumer of television products, it is important to maintain a perspective on how much slower this 'new' technology is taking over - contrary to the original predictions and expectations. In the consumer retail marketplace, the original analogue products will disappear almost overnight *when* in each country the transition to over the air *digital* television takes place. That is one of the mysteries remaining - *how* can a country such as the UK or the USA with very high penetrations of broadband *Internet* logically sustain the development of digital *terrestrial* when faced with the ultimate likely scenario - only a very small percentage of television users retain an off-the-air connection for their television reception. Only time will tell. In the end, it will all be digital in some form.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 June, 2006

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Them3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(,000)
	ANT Greece	3672/1478H	1 TV	3/4	13(,333)
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(,066)
	Ch Nepal	3626/1524V	1	3/4	15(,556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(,667)
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13(,333)
	TVK Cambodia	3448/1702H	1TV	1/2	6(,312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(,667)
	Thai Global	3425/1725V	up to 7?	2/3	27(,500)
InSat 2E/83	ETV mux	4005/1145V	6+ TV	3/4	27(,000)
	Hyd Dig 2E	3910/1240V	1	3/4	5(,000)
	Kairali TV	3699/1451V	1	3/4	3(,184)
	Indian mux	3643/1507V	3	3/4	19(,531)
	Sky Bangla	3430/1720V	1TV	3/4	6(,000)
NSS6/95E	Ant Pac (Greek)	11.104H-Australia	1 TV	3/4	2(,800)
As2/100.5E	Guangdong TV	4075/1075H	1TV + radio	3/4	6(,000)
	Euro Bouqt	4000/1150H	5TV, 19 radio	3/4	28(,125)
	SatLink	3960/1190H	3TV	3/4	27(,500)
	Reuters News	3905/1245H	1TV	3/4	4(,000)
	WorldNet	3880/1270H	4+/18radio	1/2	20(,400)
	APTN Asia	3799/1351H	1	3/4	5(,632)
	Reuters/Sing.	3775/1375H	1	3/4	5(,631)
	APTN Asia#2	3705/1445H	1	5/6	4(,166)
	Macau MUX	4148/1002V	5TV	3/4	11(,850)
	Dubai MUX	4020/1430V	4+, radio	3/4	27(,500)
	Russian/Israel	3832/1318V	up to 4 video	3/4	7(,271)
	Trace TV	3792/1358V	1	3/4	2(,400)
	BYU-TV	3767/1383V	1 + 20 audio	1/2	6(,530)
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(,640)
	Saudi TV1	3660/1490V	7+/tests	3/4	27(,500)
Express2/103E	Various-tests	3675/1475H	2	3/4	4(,340)
As3S/105.5E	CETV digital	3680/1470H	1+ TV	3/4	26(,670)
	Zee bouquet	3700/1450V	10TV	3/4	27(,500)
	Ch News Asia	3706/1444H	1TV (+)	3/4	6(,000)
	Azio TV	3716/1434H	1TV (+)	3/4	7(,000)
	BT World	3725/1425V	1TV	3/4	4(,450)
	TVB 8	3729/1421H	1TV	3/4	13(,650)
	Zee Movies	3732/1418V	3TV	3/4	6(,500)
	TV One	3739/1411V	1TV	3/4	2(,8934)
	SAB TV	3743/2407V	1TV	3/4	3(,300)
	Fashion TV	3747/1403V	1TV	3/4	2(,625)
	AAJ-TV	3750/1400V	1TV	3/4	2(,820)
	Arlang TV	3755/1395V	1	7/8	4(,418)
	Now TV +	3760/1390H	up to 10TV	7/8	26(,000)
	Star TV	3780/1370V	7(+)/TV	3/4	28(,100)
	GXTV	3806/1344V	1TV + 3 radio	3/4	4(,420)
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4(,420)
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4(,420)
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4(,420)
	HLITV	3834/1316V	1TV	3/4	4(,420)
	Star TV	3840/1310H	7(+)/TV	7/8	26(,850)
	Star TV	3860/1290V	5(+)/TV	3/4	27(,500)
	Arabsat MUX	3880/1270H	10+TV, 14Radio	3/4	27(,500)
	Dragon TV	3886/1264V	1 TV	3/4	4(,800)
	Shaandong	3895/1255V	1TV + 6 radio	3/4	6(,813)
	CCTV1	3904/1246V	1TV, 1 radio	7/8	4(,420)
	Jilin TV	3914/1236V	1TV + 2 radio	3/4	4(,420)
	Star TV	3920/1230H	4+ TV	7/8	26(,850)
	CNN	3960/1190H	8TV, 1 radio	3/4	27(,500)
	StarTV	3980/1170V	6+TV	3/4	28(,100)
	Star TV	4000/1150H	8(+)/TV	7/8	26(,850)
	Sahara digital	4020/1130V	8TV, 1 radio	3/4	27(,250)
	Hubei TV	4035/1115H	1TV + 2 radio	3/4	4(,420)
	Tianjin TV	4046/1104V	1TV + 2 radio	3/4	5(,950)
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4(,420)
	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4(,420)
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4(,420)
	Fashion/HK-Asia	4088/1062H	1TV	3/4	2(,626)
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	9(,33)
	Sun TV	4095/1055H	1	3/4	5(,554)
	PTV National	4106/1044V	1TV, 1 radio	3/4	3(,333)
	TVB8 Mux	4111/1040H	4 TV	3/4	13(,650)
	Indus News	4115/1035V	1	3/4	3(,331)
	CCTV bqt	4129/1021H	4 TV, 4 radio	3/4	13(,240)
	Zee Bqt #2	4140/1010V	8(+)/TV	3/4	27(,500)
	Henan TV	4166/984V	1TV + 8 radio	3/4	4(,420)
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4(,420)
	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4(,420)
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4(,420)
Cak1/107.5	Indovision (S-band)	2.535, 2.565, 2.595, 2.625, 2.655	33(+)/TV	7/8	20(,000)
T Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(,000)
C2M/113E	TPI	4185/965V	1	3/4	6(,700)
	Anteve	4144/1006V	1	3/4	6(,510)
	Kabelvision Mux	4080/1070H	7+ TV	7/8	28(,125)
	Indostar	4074/1076V	1	3/4	6(,500)
	Satelindo	3935/1215H	1	3/4	6(,700)
	Bali TV	3926/1224H	1	3/4	4(,208)
	Indo MUX	3880/1270H	3+ TV	7/8	28(,121)

Receivers and Errata

CA (#1, 3); FTA audio #2
Late July 04: room for more (FTA)
CA + 23FTA(A1TV, IRB3, Vision Norge, Pakistan)
New 03/03; FTA
Thai + Indian services; FTA inc. Vibe TV, Sindh TV
3TV, 5radio inc. Hellas TV Greece FTA
FTA
3FTA: TV5, VTV4, ATN Bangla
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
New - November 2002
Now CA; was 11.083H
July 04: FTA
FTA TV + radio; Russia,Port,Spain, Italy/Euro Bqr
Real Madrid (V769, A770) English FTA
Was 3923H; sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895Vt
FTA & CA
FTA and CA - NASA reports included
5 chs TV, FTA, some tests
FTA ; Dubai Sports Ch some English, soccer-
Two Israel, two Russian (REN-TV)
new here Dec 2004; Euro-French music videos
Increased coverage; great variety audio chs(03-05)
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
Now loaded from 96 5E; svrl below 3900 all RHC
replaces analogue same freq; V33, A32
Now SECA 2 CA (10-04); Radio Aust. Eng. A2011
English + V1160, A1120; 525, 625 versions
Was parallel to 3640Hz analogue (now gone)
Conax CA, all Hindi films
Also reported 3.333, 1/4 October 2005
SAB may no longer here here; moved to NSS-6?
new frequency October 2005
New April 2005; English, urdu
FTA SCPC, New PIDs V3601, A3606 June 2003
CA + FTA; DW, TV5 here now (late 2005)
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2
Was As2; HeiLong
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Shanghai
Apparently Mongolia
Star Sports Asia (+), FTA NTSC; V514, A670 (10-04)
PowVu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September 2004
Was As2
new December 2004
Was As2
Was As2
Was As2
New July 2005
new Sr, channels, April 2006
"History Channel" - SCPC, some English
MATV Ch Movies now Irdeeto 1
Hindi (+ "Plus"); day parts
moved from 4115
Now SECA 2 CA (10-04); 1 occ. FTA (varies)
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson,
Pace IRDs; 2.535 has 2 FTA. Bird now inclined.
also 3586H/17.500, 3496H/19.615
FTA SCPC; NT/NC only
change from 4055V; FTA SCPC
also try 3500H, 27.000, 3/4; strong NZ
FTA (new 06-03); V2201, A2202
test card - only - reported
FTA, may not be active full time
FTA - Sr channels 01/03: errata

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	Brunei/Sing	3733/1417H	1TV	3/4	6(,000)
	SCTV	3726/1424V	1TV	3/4	6(,620)
	RCTI	3473/1677H	2	3/4	8(,000)
As4/122E	CCTV internal	4100/1050V	6	3/4	27(,500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(,000)
	Asian bqt	3960/1190V	up to 8	7/8	30(,000)
Ap6/134E	Multiple	4140/1010V	up to 8	7/8	27(,500)
T18/138	Tests	3460/1690V	8	3/4	30(,000)
Am3/140	STS +	3731/1419R	1	3/4	3(,200)
Jc2A 154	BYU-TV	3915/1245V	1+ 20 languages	3/4	4(,166) (?)
MeasS2	Astro Mux	11.602H	up to 17TV	3/4	41(,500)
	VTV MUX	11.522V	3 TV	3/4	9(,766)
R3/152	AuroraBuz	12.407V	4TV, 10 radio	2/3	30(,000)
	UBI/tests	12.425V	up to 13 TV + radio	3/4	22(,500)
	Globecast 2	12.525V	13 TV, 8 radio	2/3	30(,000)
	Globecast (feeds)	12.550-555V	1TV	2/3	6(,110/670)
	Globecast	12.564V/T13	2+ TV	2/3	30(,000)
	UBI/tests	12.613H/T14L	11+TV	3/4	22(,500)
	UBI/tests	12.640H/T14U	11+TV	3/4	22(,500)
	Globecast 1	12.658V/T17	14TV, 15 radio	2/3	30(,000)
	UBI/tests	12.674H/T15L	11+TV	3/4	22(,500)
	UBI/tests	12.701H/T15U	11+TV	3/4	22(,500)
	WA ABC	12.702V	1 TV, 1 radio	7/8	14(,288)
	WA SBS	12.720V	4TV, 2 radio	5/6	12(,600)
	WA GWN/WIN	12.738V	2TV	7/8	14(,295)
CT/156E	Internet tests	12.288V/T1L	no regular TV	1/2-2	28(,650) (?)
	Aurora	12.324V/T1U			
	Pay TV	12.365V/T2	11TV, 2 radio	3/4	27(,800)
	Aurora Home	12.407V/T3	5 TV, 13 radio	2/3	30(,000)
	Pay-TV	12.447V/T4	5TV, 4 data	3/4	27(,800)
	Pay TV	12.487V/T5	3+ TV, data	3/4	27(,800)
	Aurora 2	12.527V/T6	7TV, 20 radio	3/4	30(,000)
	Pay-TV	12.567V/T7	10 TV	3/4	27(,800)
	Pay-TV	12.607V/T8	10 TV	3/4	27(,800)
	Pay-TV	12.647V/T9	10 TV	3/4	27(,800)
	Pay-TV	12.692V/T10L	6TV, 27 radio	1/2	28(,650)
	Aurora MUX	12.728V/T10U	4TV, 17 radio	1/2	24(,450)
	Austar	12.305H/T11	6TV, 24 data	3/4	30(,000)
	Pay-TV	12.358H/T12	10 TV	3/4	27(,800)
	Pay-TV	12.398H/T13	10 TV	3/4	27(,800)
	Pay-TV	12.438H/T14	6TV, 3 data	3/4	27(,800)
	Pay-TV	12.478H/T15	10 TV	3/4	27(,800)
	Pay-TV	12.518H/T16	10 TV	3/4	27(,800)
	Pay-TV	12.558H/T17	10 TV	3/4	27(,800)
	Pay TV	12.598H/T18	10 TV	3/4	27(,800)
	Pay-TV	12.638H/T19	10TV, 30 radio	3/4	27(,800)
	Pay TV	12.688H/T20	11TV	3/4	27(,800)
B1/160	7 Central DTV	12.365H	1TV	3/4	5(,100)
	Occ. feeds	12.380H	1 TV - *	3/4	6(,111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(,111)
	Net 7 service	12.397H	1	3/4	7(,200)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(,424)
	7 digital feeds	12.397H	1TV	3/4	7(,200)
	Feeds to NZ	12.411V	1 TV	3/4	6(,111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(,600)
	TVNZ DTH	12.456V	5+TV	3/4	22(,500)
	TVNZ Tests	12.483V	up to 11TV	3/4	22(,500)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(,500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(,500)
	Sky NZ	12.644/671V	9TV	3/4	22(,500)
	ABC western	12.610H	5TV	7/8	14(,3288)
	Sky NZ	12.707/734V	8+TV	3/4	22(,500)
P8/166E	ABS-CBN	12.575H	4+TV, 4+ radio	2/3	13(,845)
	NZ tests	12.642V	up to 8 TV	3/4	28(,060)
	JEDI/TVB	12.686H	11+ TV	3/4	28(,126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(,500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(,125)
	Taiwanese MUX	4080/1070H	12+ TV	5/6	30(,000)
	NHK Joho	4060/1090H	7TV, 1 radio	1/2	16(,180)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(,470)
	NET +	4121/1029V	1 TV	3/4	4(,774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(,470)
	Discovery	3980/1170H	8 typ.	3/4	27(,690)
	CalBqt Pas8	3940/1210H	up to 3+ FTA	7/8	27(,690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(,500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(,694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(,000)
	CCTV Mux	3829/1321H	up to 4+ 1 radio	3/4	13(,240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	17(,500)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(,632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(,000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(,850)
	MTV	3740/1410H	8	2/3	27(,500)
P2/169E	WA Mux Pv	12.281V	3+ TV, radio	2/3	27(,500)
	Ariang TV	12.401V	1TV	3/4	4(,400)
	ABS-CBN	12.575H	4TV, 2 radio		13(,845)
	Test mux	12.715H	6+ TV	2/3	30(,000)
	TARBS feeds	4090V/1060V	9TV + radio	3/4	21(,000)
	BBC SCPC	3986/1164H	1TV	1/2	5(,700)

Receivers and Errata

FTA ; Singapore 23hrs, Brunei 1 hr; Brunei V1200 was on 4048V; New Caledonia, parts of Australia FTA SCPC; Australia, New Caledonia, some Eng. Irdeto 2; 4060V HDTV CA; also try 4020V PowerVu; some FTA (Ch. 1 & 3) CA & FTA NTSC: Japan, Taiwan (ApStar 6: also 4180V same #s; some analogue also) also try 3660/3540V, Sr 30,000, 3/4; some FTA North beam; also try 3875R, 12.475, 1/2 Strong NZ & Australia; may now be 1/2, 6.525 Aust East beam - 3 FTA + 14 CA WA only? Skew path, intended Asia differs from 12.407 C1; **tune ch FTA; NZ+Au** T11/lower testing late May 2005 NZ + Au, FTA Mcript CA occ feeds, NZ + Au; recently 12.553V AMTV, Healing only FTA svs now here High performance beam; not NZ; new PIDS 10-05 High performance beam; not NZ; new PIDS 10-05 NZ + Au (Mcript, PowVu capable) High performance beam; not NZ; new PIDS 10-05 High performance beam; not NZ; new PIDS 10-05 ABC WA tests, FTA SBS, radio tests WA FTA Irdeto V2 CA, tests (GWN, WIN) Now on Australia + NZ beam; SCPCs not currently in use Tests; SBS-NDS CA, others FTA when here NZ (90cm) + Australia (**Only C1 svs left on NZ**) Australia NA only (leakage to Norfolk, New Cal) Australia NA only (leakage); 9-Net x 3 widescreen Arrow radio (still here), tone FTA Pay-per-view movies; CA Pay-per-view movies; CA Pay-per-view movies; CA ABC for Foxtel/Austar; previously 12.288V changes September 2005 Austar inter; **Expo FTA** NDS CA + Mcript, CA CA, subscriptions available Australia, Norfolk Sky News active; 'Help x 2' FTA CA, subscriptions avail Au, Nrlk, **TVSN FTA** CA, subscriptions available Australia, Norfolk "Home" CA, subscription available Australia, Nrlk CA, subscriptions available Australia, Norfolk CA, subscription available Australia, Norfolk CA, subscription available Australia, Norfolk Central beam; Freq change 08-05 * - plus 12.451H, 12.460H * - plus 12.293V, 12.402V, 12.411V Full schedule less commercials - links; may be CA PIDs vary; also try 12.360, 12.370 occ. digital feeds; typ fla Often NTSC; USA-Australia-NZ **Also 12.437H, 12.456H** same params; HDTV+WS FTA 7 channels (TVNZ x 4); +Maori, DW, CCTV9 Testing late June; 16.9 added late July NDS CA, subscription available NZ NDS CA, subscription available NZ NDS CA, subscription available NZ also see 12.610, 626, 643, 670, 688, & 706H NDS CA, subscriptions available NZ CA Testing new NZ Ku beam June 2002-Irdeto-2 CA Dateline west; also east PAS2, 3901V PowVu CA Tests - CA service announced PowVu CA & FTA; sub available-changes 05-06 was PAS-2, previously 3992V; **feeds FTA** NET25 + FTA; new PIDS April '03; reload PowVu CA; ch 11 DCP-CCP bootload; audio **FTA** PowVu/CA (some audio **FTA**) PowVu CA & FTA (EWIN + CBS + TBN +) NDS CA (6 channels); one test card occ FTA **Myx FTA** V1960, A1920 + radio FTA Mixed FTA & CA; STC gone (CA) PowVu FTA, replaces PAS-2 svs CCTV cross pole; new SR 04-06 PowVu CA PowerVu; some audio **FTA** PowerVu; Asian MUX; new parameters Nov '03 # 8 **MTV China FTA V289, A290**; rest CA PowVu CA, WIN, ABC NT, SBS; status unknown Test - may not stay permanently Temp FTA; subs Aust 011-800-2270-0722 initially with 6 NTSC colour bars Occ FTA (Chile +); BIG power reduction Nov 03 DD? World record here January 2005

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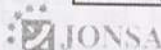
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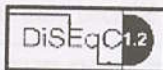
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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(,900)
	Feeds	3868/1182H	1	2/3	6(,620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(,620)/7(,498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(,800)
	HK bouquet	3850/1300H	up to 8	2/3	24(,900)
	Korean Rgt	3771/1379H	1	3/4	6(,510)
AMC23/172E	Various-tests	12,730H	up to 8	3/4	30(,000)
1804/174E	IPSTAR	12,619H	1	2/3	25(,220)
	Tests-NZ beam	12,646H	1	3/4	22(,418)
	RFO Poly	4027/1123R	1TV	3/4	4(,566)
1701/180E	TNTV	11,060&11,514V	9	3/4	30(,000)
	TVRFO	11,136V, 11,174V	6+TV, 3+ radio	3/4	23(,149)
	Canal+ Sat	11,610H	16TV, 1 radio	3/4	30(,000)
	PBS	12,648HH	16TV possible	3/4	28(,066)
	TVNZ/BBC	4186/964RHC	1	3/4	5(,632)
	TVNZ	4178/972RHC	1	3/4	5(,632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(,680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(,632)
	Fiji Sky Pacific	4095/1055LHC	6TV + future radio	3/4	16(,505)
	Fiji Sky Pacific	4055/1095LHC	7TV + future radio	3/4	16(,505)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(,632)
	TVNZ feeds	4044/1106R	1	3/4	5(,632)
	NBC to 7 Oz	3960/1190R	1	7/8	6(,447)
	TBN Mux	3927/1223R	4TV	2/3	11(,394)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(,000)
	Ioarana	3772/1378L	1	3/4	4(,566)
	NASA TV	3854/1296R	1 TV	3/4	2(,000)
	TVNZ	3846/1304R	1	3/4	5(,632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(,111)
	USA feeds	3749/1401R	4?	?	26(,400)
NSS-5/177W	Pacific IP Data	3763/1387R	none-data	3/4	27.5
	BYU-TV	4185/965R	1TV, 20+ audio	1/2	6(,525)
	Australia Temp.	12,522V	8 SCPC	7/8 & 5/6	14,294 & 12,600
	IPSTAR Tests	12,691V	8 TV	5/6	17(,600)

Receivers and Errata

New December 2003; 24/7 "Hope Chs."

FTA (occ sport); also try 3863, Sr6 100

FTA-typ NTSC-occ sport, live Shuttle

PowVu CA + FTA (includes BBC-W 05-05)

was 4148Vt, some FTA

Korean MUX, reload 12-04; new Sr

Testing on NZ/East Australia beam

Tests, late May start; also 12,646H

Testing possible data links; June 2003

SE spot beam; was 4027LHC

east spot; 10TV + r each, vertical pol

FTA 11,136 Tahitian beam, 11,174 west beam; 12/04

1+ FTA, MediaGd "2"; + 10,975 weaker

Testing Fiji region pay-TV (MDS) package (Oct '04)

DMV/NTL early vers., occ feeds, typ ca

DMV/NTL early vers., occ feeds, typ ca

DTS Direct to Sailors; audio previously FTA - gone

DMV/NTL early vers., occ feeds, typically ca

Nagravision CA (> Feb 1, 2005) New PIDS

All now (including Fiji 1) CA; 7 Feb, 2005)

DMV/NTL early vers., occ feeds, typ ca

SCPC, mixed CA and FTA feeds

CA, Leitch encoded

January 2006-now 4 channels, new Sr

New PIDS Dec 03 very strong NZ, Pacific

FTA SCPC; East Hemi Beam-Tahiti

24/7 live NASA - West Hemi bn (can be difficult!)

SCPC, mixed CA & FTA, feeds

NBA feeds - probably CA - new Nov 2003

16-QAM (not MPEG-2 compatible)

Data only but useful for dish alignment

Global beam - requires sizeable dish

Aust beam: 12,522, 538,555,574,604,621,639 & 657

CA Tests - Taiwan TV: data coming?? (NZ beam)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. AV-COMM P/L, 61-2-9939-4377.

AV-COMM Tiny Tot. FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.

Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Phoenix Technology Group (www.phoenixsatellite.com.au) (Irdeto 2 as well as FTA versions)

Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>

eMTech eM-100B (FTA), eM-200B (FTA + Cb2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)

Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 CI. Review SF#119. www.aDigitalLife.com

Humax ICRI 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.

Humax IRCI 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good.

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix TechnologyGroup, and Satmax (<http://www.satmax.ws>)

ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.

KSF-570 FTA digital receiver, import; KSC-570 adds CI x 2 (no test or user results available). Asoft Limited, 64-4-234-1096

KSC-N550H2 'Premium Dual DVR' digital receiver (no test or user results available). Asoft Limited, 64 4 234 1096

MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.

Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced.

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).

Phoenix 111, 222, 333 models (no longer produced). Service, backup - Phoenix Technology Group 61 3 9553 3399. www.phoenixsatellite.com.au

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal +687-43.81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).

PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigitalLife.com

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.

SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com

SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).

Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin

Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below)

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSeqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.

UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.

Voyager. Two models (08-05); one FTA auto scan, 6000 ch memory; one multi-CA format CAM. Satlinknz.co.nz

Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447; long term teletext problems (loses TT).

"X" Digital. When modified with "aftermarket" Internet software, does Aurora and other V-1 CA without card; review SF#119. Strong Technologies (61-3-8795-7990).

Accessories:

Aurora smart cards. MCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.

PowerVu Software Upgrade. PAS-8, 4020/1130Hz, Sr 26.470, 3/4, pgm ch 11 and follow instructions (do not leave early!)

PowerVu (Pacific) repair service: Cable & Sat Svcs, Darius West, 61-2-9792-1421 (Email darius@cases.net.au)

WITH THE OBSERVERS

AT PRESS DEADLINE

NSS5 (177W) has C-band activity: 3973LHC feeds from Timor to New Zealand (Sr 5.632) + possible data service 4026LHC, Sr 5.360. Thaicom 5 testing from 78.5E, for Australians, will be active shortly if not already; compare changes and report!

Launch schedules: "Thaicom 5 successfully launched to 78.5E and should be testing as you read this - probably from a nearby, adjacent location (this will replace C-band portion of Thaicom 2-3). Earliest D1 launch date? Increasingly, it looks like November/December unless there is a wholesale revision of the current schedule, to move D1 forward in time! Go to www.arianespace.com/site/launchstatus. New Zealand sources continue to suggest 'third quarter' (July-September) but even a quick study of the Ariane launch schedule suggests this is not so. D1 does have optional second launch option so watch for indications the bird is being shipped to someplace other than Ariane for launch.

AMC23/172E: "Gloecast MUX, test. 12.730V, has shut down." (Tracy)

NSS5/ 177W: "Five ABC and 3 SBS services have moved here (12.522V, 12.538V, 12.555V, 12.574V and 12.604V - all ABC at Sr 14.312) plus 12.621V, 12.639V and 12.657V - all SBS at Sr 12.609." (JW) (Editor's note: Some report ABC at Sr 14.294 - slight different and FEC 7/8, and SBS at 12.600, FEC 5/6. NSS5 is being used because of a fear B1 is going to quit at any time. This is not permanent - only until D1 is operating.)

Optus B3/152E: "Transponder T1/12.282V, which carries the aviation SCPCs at the low end, has had a number of additional SCPCs added to it since the problems with B1 at the end of March. Only one of these will load on a normal MPEG-2 receiver; 12.294V, Sr 2.000, 3/4. There is no loading table and a PID search with DVB2000 software finds no data. On T5/12.525V, 30.000, 2/3 (Gloecast) has replaced a pair of channels. The Russian ORTI pay channel is now replaced with 'Russia Today' which is a 24 hour English (!) news channel from Moscow (V2560, A2520). One news reader has a distinct British accent, the balance speak quality English. The website is www.RTTV.RU; it is FTA currently. The second Russian pay-TV channel (NTV - not to be confused with the Turkish NTV on UBI) has been replaced with EWTN, the American based Roman Catholic service (V1960, A1920). The EWTN label still appears on T13 (12.563H) but it has not been there for months. On T7/12.657V, 30.000, 2/3 (Gloecast) has added SETMAX to the end of their 'Vision Asia 3' lineup. Programming, FTA as of early June, is from Sony Entertainment. Also, early in the year a radio channel labelled 'Vision Asia Radio' (A573) was added but it only became active (late in May) after changing

the identification label to 'Tarana'; FTA. Following the wander-about by B1, the very limited bandwidth remaining on B3 has often been used for feeds. The Imparja feed is often at 12.390H (Sr 5.423, 3/4) with the PIDs 'hidden'. During the Beacons Field mine rescue, there were often feeds on B3 including: 12.290H, 7.197, 3/4 (labelled 'SNTV Path-1'), 12.336H, 6.669, 3/4 (labelled 'Astralinks SNG'). ABC has been using 12.325H, 6.977, 3/4 for news feeds from Alice Springs. I also note not all of the feeds are MPEG-2 (MPEG-4 might be an option). UBI: from about May 15th the channels in all 5 in-use MCPCs (less the 12.452H test MCPC) went FTA (their CAT continues to show MDS CA but no sign of Irdeto). In early May, approximately 6 extra Greek radio channels were added - as of June 5 there are 63 (UBI) TV channels and 33 radio. On the 19th or so of May UBI's Mike Boulos began airing a custom made message on channel 72. He is sitting in his office, a photo of his daughter adjacent, in a plush leather chair. A text message scrolled across the base of the image - 'Limited Offer Decoder \$195 ends 15th June'. Boulos lifts a receiver onto his desk - a unique shape and I must add ugly IRD. The case is silver with a bright blue plastic patch on the front panel; card slot on the right hand side (two - only bottom one active). T1upper/12.452H, SR 22.500, 3/4 (UBI's test MCPC), a CAT conditional access table) has been added. It only contains Irdeto and the code indicates it is was created for Australia as a much later version than that in use by Austar and Aurora. The TV channels (here) now have labels, which are similar to those on T15lower/12.674H, CA. The radio channels here, R01 to R12, remain FTA with a few being Arabic. The older NIT, which incorrectly said this was PAS8, has now been removed." (IF, Qld.) "Southern Cross is moving from B1 to B3 by end of June - over fears that B1's limited station keeping fuel may shut the bird down before D1 replacement is ready." (GC, NSW)

Optus C1/156E: "T2/12.367V, 27.800, 3/4 (Foxtel, Austar) previously had two CA channels labelled 'spare' with low data rates (probably test cards). Recently, data rates have greatly increased but there is no audio PID suggesting this to be (Internet?) data of some sort. T3/12.407V, 30.000, 2/3 (Aurora) where Central 7 is located has had a sudden increase in data rate suggesting their teletext PID has grown. Two extra pages have been added, labelled 'Seven Network Operations Ltd. This is not a test page'. And there is other

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. **Photos of yourself, your equipment** or off-air photos taken from your TV screen are **welcomed**. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for July 15th issue: July 4th by mail or 5PM NZT July 5th if by fax to 64-9-406-1083 or Email

skyking@clear.net.nz.

UBI's Anti-Piracy Infomercial

"This has been running as a loop on UBI channel 72, subtitled in several languages. The 'setting' is a police interview room where a plain-clothed detective is walking around a table. Sitting at the table is the suspect with his face pixellated (to prevent identification of the actor!). On the table, a stack of six satellite receivers of various brands, and a small audio tape recorder to record the criminal's confession. The suspect speaks with an Arabic accent: 'Yeah, it is only for the money, just to make a quick buck. Most of them, they come and think they are going to get a great deal and they think they are going to watch it forever. They are real keen but they have no idea. They always pay anything to get it. The big joke is they pay more in the end to do it my way. Basically, I just move the equipment from one house to another. They get their ethnic TV and I get my money.' Here there is a close-up of the detective slamming an envelope, overflowing with \$100 and \$50 bills, on the table in front of the suspect.

'Just cash money. I don't go home unless my pockets are filled with cash. But hey, I know the gig's up (here a close-up of a smart-card being extracted from a receiver). Word on the street is they are rolling out this brand new secure technology. They'll know exactly who's watching and who's paying.'

Following this is a series of full-screen graphics, with a voice-over (a stern male voice; several language versions) reciting the text of the graphics:

'Television signal theft is PIRACY'

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'Report PIRACY now. Call the PIRACY hotline on (02) 9776 2250.'

'UBI WORLD TV supports ASTRA and the Federal Police in piracy investigations.'

Alas, while UBI has been FTA in the receiver swap-out through several weeks, and running a crawl on many channels advising viewers to go to channel 72 to learn about the receiver changes, there is no sign of the new receiver information on 72 - only the piracy loop. This seems like a well-intentioned effort which somehow has come apart in implementation."

ER, NSW

data as well here which the multi-functional software DVB2000 indicates is not teletext. I am hopeful Central 7 will add the AUSTEXT service, carried by GWN. Would it be a crime to run the teletext FTA?" (AI, NSW)

PAS2/169E: "Suggest you check 12.591 centre freq with spectrum analyser set to 60 MHz width." (PM)

PAS8/166E: "NHK Joho net has changed loading parameters: 4060H, Sr 16.180, 1/2 which should work far



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SATSHEK Communications, **Suva** (Ph3307933; parmarbros@connect.com.fj)

French Polynesia

Telexpert-Tahiti, **all of French Polynesia** (Ph 689 77 11 25; Fax 689 83 89 00; telexpert@mail.pf)

New Zealand:

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John Stewart, **southland** including Otago (john.s@tritec.co.nz)
The Antenna Man, **Taranaki** (Ph 06 758 1633; antenna.man@xtra.co.nz)
Quality Pics, entire **Waikaito** region (Ph 0800 007 667; maxnkay@xtra.co.nz)
Smartzone, **Wellington-Wairarapa-Palmerston N** (C+Ku) (Ph 029 289 6333; info@smartzonesystems.co.nz)
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Regional Outcomes (60+ locations, **all states, territories**) (03 9923 7333; installs@regionaloutcomes.co.au)

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Town & Country Antennas, 60km radius **Murwillumbra/Tweeds Heads** (Ph 02 6672 8595)
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Goodcom Communications P/L, 100km radius of **Walcha** (Ph 02 6777 1044; goodcom@northnet.com.au)

Northern Territory

ALLSAT TV, **Darwin and NT**; (Ph 08-8927 1300, 04 3771 0797; allsat.tv@pacific.net.au)

Queensland:

Teleworks, 100km of **Cairns** (C + Ku). (Ph 0412 84115; rajvrm@aol.com)
Cape York Electronics, **Cooktown and 'the cape'** (started 1970s) (Ph 07 40 695 252; cyecltn@tpg.com.au)
Phil's Antenna Systems, 100km radius of **Hervey Bay** (C+Ku since 1996). (Ph 0741 256 273)
Rick Dalton TV & Satellite, 100km of **Kawana Waters** (C + Ku). (Ph 07 5493 4343; rick@antectv.com.au)
Videotronics Mackay, **Mackay/Whitsundays** radius 200km. (Ph 07 495 575 052; sales@videotronics.com.au)
Tableland Ant Svcs, **Malanda, Atherton T'lands + 'Gulf/ Cape'** (Ph 07 40966262; tabantennaserv@bigpond.com)

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better for smaller dish systems." (GC, NSW) "This satellite slipped out of its 'orbit box' May 7th with Ku signals most affected; normal service by May 15th. This is not a good sign, after the B1 experience!" (Gerald) "A number of Russian channels FTA have appeared on 12.606H, Sr 28.066, 3/4 apparently to occupy space to encourage former Horizons TV subscribers from moving their dishes - there is a legal muddle here!" (Thomas, Sydney)

Telstar 18/134E: "Check 4180H, 2.880, 3/4 V308, A256 for Aljazeera International promo now running." (Arnold)

Soapbox: "Extensive study by Samsung illustrates the problems facing Australia as the conversion from analogue to digital progresses. 96% of those surveyed remain confused about what digital is or will mean for their homes. Some examples include: 51% believe all DVDs are HD (virtually none are, yet - still SD). 54% believe Foxtel channels are (all) HD, 46% believe digital terrestrial channels are HD, and all Plasma/LCD receivers are HD (43%). Additionally, 63% of Australians owning a 'HD-ready' TV set do not own a HD STB and 40% say they would upgrade to a HD TV set if their existing SD discs would play in HD - something not possible without 'HD upscaling' (such as the Samsung Hypervision DVD player). So, who is to blame for such a bad set of consumer attitudes concerning the conversion from analogue to digital, or heaven-help-us, the optional HD version of digital?" (Samuel T, Canberra) "The day of the one-person TV station has arrived - anyone with a camera and a broadband uplink capable (256 Kbps or better) outward bound line can be a TV station. There are now hundreds of such 'stations', many limited to a few hours per day, but all creating their own programming or sharing material from friends. A number of 'collection points' have sprung up (Singapore's M2B World is one) where those who are looking for 'net action' can discover what's new, hot, and when it is available. This service is launching a 40-Hollywood movie channels, Korean drama, and a host of other materials for a fee of (US)\$10.90 per month. Other sites with lots of video connections include YouTube or simply Google 'Internet TV' to see what is available - it changes hourly." (Chen L,

Singapore) "TVNZ has been guaranteed the funds to continue distributing TVOne evening news (6-7PM NZT) via PAS-2 by government. Additional programming now being distributed to at least 12 Pacific island nations includes Tagata Pasifika, Commonwealth Games (when played), Rugby 7s and (NZ) Netball. New Zealand is not giving up the Pacific without a fight!" (DC, NZ) "Correction: AMC23 is NOT going to become part of the Intelsat fleet as erroneously reported here in May. But their Ku band capacity is essentially all reserved for Boeing to use for trans-Pacific flights (TV and Internet to seats)." (Chris Clarke, NZ) "Echostar's DISH TV is in a major quandary. In the USA, home dish subscribers are allowed to access only their regional/local network and independent TV stations via satellite. But DISH has argued that the rules for this do not take into account the many regions where terrestrial TV signals are supposed to reach but because of terrain do not. They have been substituting distant network stations for subscribers in these areas and US Court of Appeals has ruled they must stop this, and turn off service for homes so connected. This is a major problem affecting perhaps 25% of DISH's clients - and DISH itself." (Troy L, Michigan) "A warning - those participating in UBI's box trade-in should read carefully 'Clause 4', circle it and initial 'I do not agree to this clause', which means the UBI box you now own need not be turned in." (Sachel) "We have Aurora cards (for SBS and ABC) in stock." (Garry Cratt, Avcomm P/L) "Chaparral seems to be coming out of hibernation, between www.chaparral.com early industry history video and recent press releases including one detailing firm's work with Edusat project in Mexico." (Tim, California)

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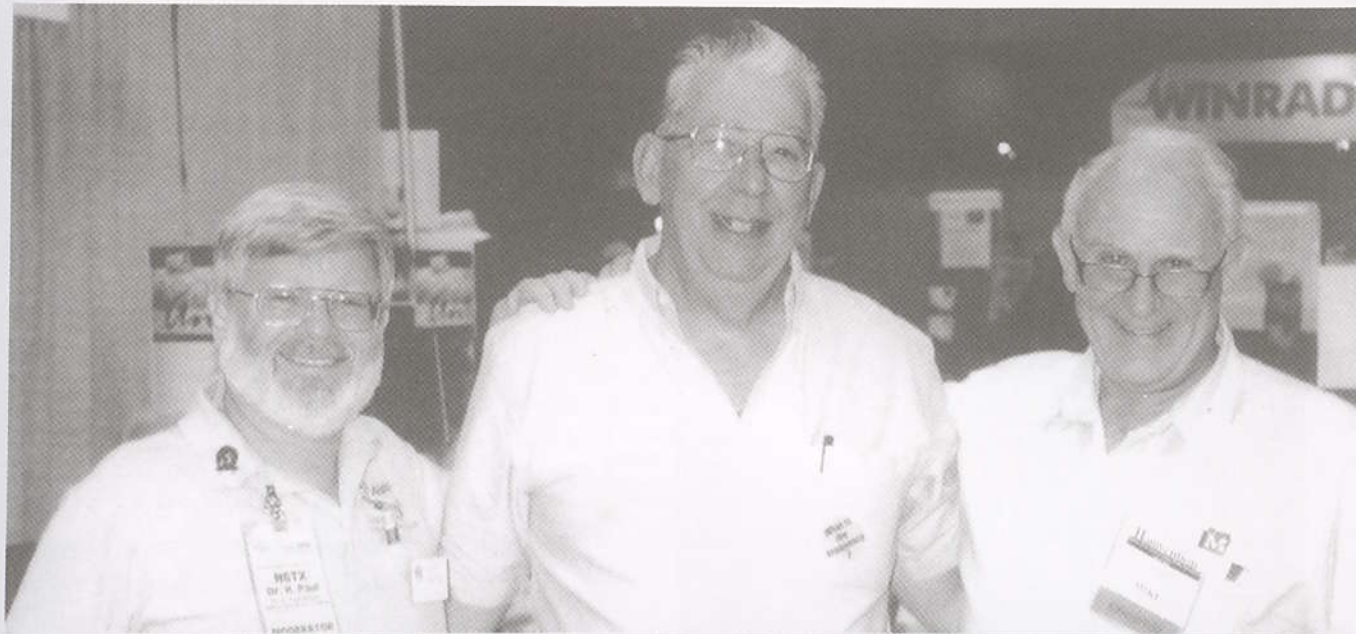
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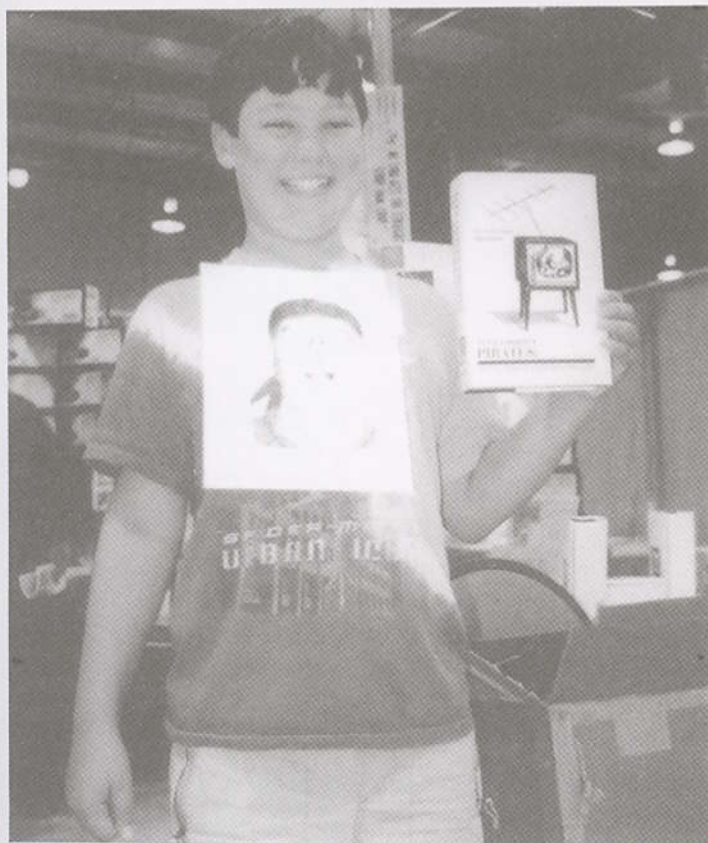
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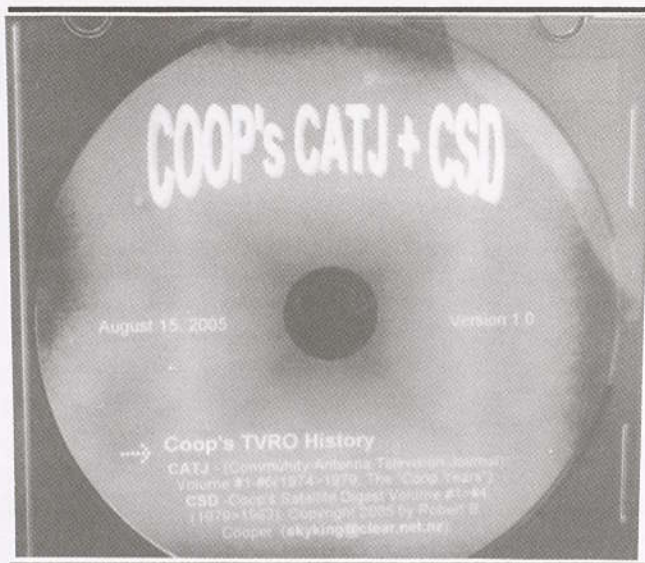
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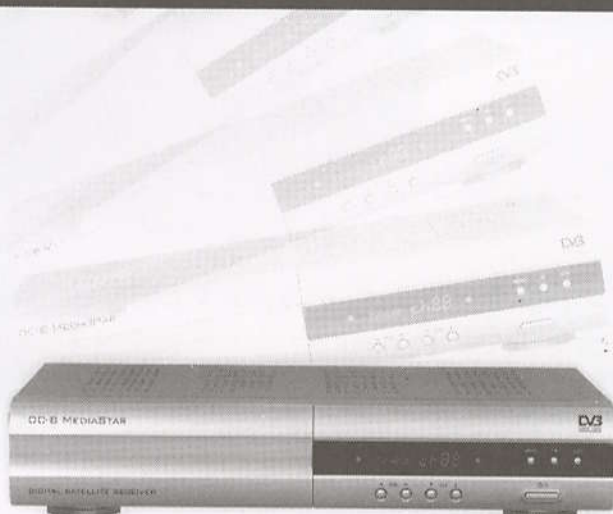
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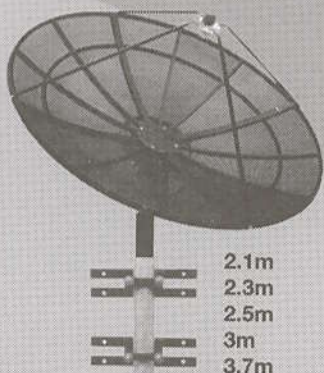
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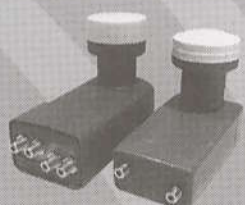


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